UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK

In re:	Case No. 1:08-bk-13555 (SCC)
Lehman Brothers Holdings, Inc., et al.,	
Debtors.	

Declaration of Professor William N. Goetzmann

December 3, 2014

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I.   Qualifications

1.   I am the Edwin J. Beinecke Professor of Finance and Management Studies and the
Director of the International Center for Finance at the Yale School of Management,
where I have been since 1994. At Yale, I teach or have taught courses on, among other
topics, investments, financial history, and real estate. Additionally, my courses on real
estate include a section on residential mortgage-backed securities ("RMBS").

2.   I am an expert on a diverse range of assets, including stocks, bonds, mutual funds, hedge
funds, commercial real estate, art, housing, mortgages, and mortgage-backed securities.
My research interests include portfolio management, real estate, asset pricing, selection
bias in performance measurement, and financial history. My recent research has focused
on operational risk, financial history, behavioral finance, art investment, endowments,
and mortgage securitization. Much of my academic work utilizes statistical and
econometric techniques to analyze financial data. A substantial number of my published
articles address how mistakes in inference are induced by reliance on biased sampling.
My academic research, including research related to home ownership, real estate indices,
and mortgage markets, has been published in many major academic journals, and my
non-technical work has been discussed in many major financial news publications. My
econometric techniques have also been relied upon by the Office of Federal Housing
Enterprise Oversight. Finally, I have served as an associate editor of major finance
journals and was a co-editor of *Real Estate Economics*, an academic journal.

3.   My published books include: The Great Mirror of Folly, Finance, Culture, and the Crash
of 1720 (Yale University Press, 2014); The Origins of Value: The Financial Innovations
that Created the Modern Financial Markets (Oxford, 2005); The Equity Risk Premium:
Essays and Explorations (Oxford, 2006); Modern Portfolio Theory and Investment
Analysis (John Wiley & Sons, 2006, 9th edition forthcoming); and The West of the
Imagination (Univ. of Oklahoma Press, 1986 and 2009).

4.   In addition to my academic activities, I serve on the scientific advisory board of Zebra
Asset Management, the boards of Jeffrey Company and Jeflion, which are investment
companies, and on the Investment Advisory Council of the UAW Retiree Medical

Benefits Trust. I am the chair of the investment committee of the Nathan Cummings

Foundation, and I serve on the boards of Sarah Lawrence College and Hamden Hall

Country Day School. In past years, I served on the board of the Commonfund, a

nonprofit investment manager, where I was the Chair of the Audit and Risk Committee.

Several of the Commonfund's investment products included RMBS. I also served on the

board of the National Futures Association.

5.   I have consulted to the Ministry of Finance of Norway, where I co-authored a report

entitled "Evaluation of Active Management of the Norwegian Government Pension Fund

– Global." During my engagement, the fund contained significant RMBS holdings. I

also served on the advisory committee to the Congressional Oversight Panel on the

Emergency Economic Stabilization Act of 2008.

6.   I received a Bachelor of Arts (BA) degree in Art History and Archeology from Yale

University, a Masters of Business Administration (MBA) degree from the Yale School of

Management, and a Ph.D. in Operations Research (Finance), also from Yale University.

My resume, which includes my testimony over the prior four years, is attached as

Appendix A.

II.   Assignment

7.   I have been asked by Willkie Farr & Gallagher LLP, counsel for Lehman Brothers

Holdings, Inc. ("LBHI" or "Lehman"), to express my preliminary opinions regarding the

Declaration of Charles A. Parekh, Ph.D., dated August 21, 2014 (the "Parekh

Declaration") and the Declaration of James H. Aronoff dated August 21, 2014 (the

"Aronoff Declaration").

8.   In preparing this declaration I have reviewed information from a number of sources as

detailed in Appendix B. In addition, I have applied my knowledge and expertise gained

through my years of academic research and teaching at the university level. My work in

this matter is ongoing, and I reserve the right to supplement this declaration as new

information becomes available or if asked by counsel to consider additional issues.

9.   For my work in this matter, I am being compensated at my standard consulting rate of
        $1,250 per hour. I have been assisted in this matter by the staff of Cornerstone Research,
        who worked under my direction. My compensation is in no way contingent or based
        upon the content of my opinions or the outcome of this matter.

III.   Summary of Opinions

10.   Based on my review of the materials and my expertise, I conclude that the analyses set
        forth in the Aronoff and Parekh Declarations are not based on a sound and reliable
        methodology for valuing the RMBS Trustees' claims. The analyses are based on
        unreasonable assumptions and lack any empirical or logical support. Perhaps most
        critically and by design, the RMBS Trustees' analyses cannot prove—as I understand that
        they must in order to recover on their loan repurchase claims against LBHI—that the
        alleged breaches materially and adversely impacted the performance (and therefore the
        value) of the loans with any acceptable degree of certainty.[1]

11.   More specifically, I have identified at least eight errors in the analyses set forth by Mr.
        Aronoff and Dr. Parekh, and therefore conclude the following:

        a)   *Mr. Aronoff and Digital Risk assume breaches cannot be "cured":* Mr. Aronoff
                and Digital Risk unreasonably assume that the breaches that comprise their 57%
                breach rate cannot be cured. For example, if a piece of paper is missing from a
                loan file, Mr. Aronoff and Digital Risk appear to assume it either never existed, or
                could not be found if LBHI was presented with the alleged breach.[2] There is no
                basis to assume that defects of this type are not immaterial in that they could be
                cured. This is discussed further in ¶ 12 below.

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[1] For the avoidance of doubt, I have not been asked to perform an underwriting analysis to determine the validity of
the RMBS Trustees' loan-level claims with respect to the 4,579 loans reviewed by Digital Risk.

[2] *See, e.g.*, loan number 000000018861807, Parekh Declaration Attachment V Part 1, p. 3 of 250. Digital Risk finds
that this loan is missing a Truth-in-Lending disclosure, a HUD-1 (disclosing details of the loan cost), the actual
mortgage Note, and an appraisal. Digital Risk concludes from this lack of evidence that no appraisal, etc., must
have ever existed.

b)   *Mr. Aronoff and Digital Risk unreasonably assume that a decline in income after the loan was made is indicative of an original misrepresentation of income:* The most frequent type of alleged breach relates to the misrepresentation of borrowers' incomes. In many cases, the evidence relied upon to support the notion that a borrower misrepresented his or her income is actually the income earned by the borrower in the years **after** the loan was extended.[3] Mr. Aronoff and Digital Risk do not explain why it is reasonable to assume that a borrower's subsequent income can lead to the conclusion that the borrower's original income was misrepresented in the loan application. Even if a borrower's income was actually misrepresented, that alone is not sufficient to conclude that such misrepresentation of income would have a material and adverse impact on the performance of the loan, often years later, after controlling for other key determinants of defaults such as the decline in housing prices from 2006 to 2011, or increasing unemployment.[4] This is discussed further in ¶ 16 below.

c)   *Neither Mr. Aronoff nor Dr. Parekh appears to have performed any empirical analysis to establish that the alleged breaches materially affected the performance of the loans:* As a predicate to any recovery, I understand that the RMBS Trustees must establish that the alleged breaches had a material and adverse effect on the performance of the loans. Neither the Aronoff Declaration nor the Parekh Declaration contains any empirical analysis establishing that the performance of the loans (and therefore their value) was adversely affected by the presence of alleged breaches, rather than by other factors such as the disclosed loan and borrower characteristics (credit score, LTV, etc.) or market conditions (rising unemployment rates, the largest decline in U.S. home prices in generations, etc.) Instead, Mr. Aronoff defers to a third-party vendor, Digital

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[3] *See, e.g.*, loan number 32157547, Parekh Declaration Attachment V Part 7, p. 199 of 206. This loan closed on December 15, 2005, and it would have been clear to any purchaser of the loan that it was a "stated income" loan (i.e., the income was not verified by the originator). Digital Risk concludes that "[t]he Borrower misrepresented his disclosed income. The Borrower falsely stated income as a Real Estate Agent earning $12,850 per month on the loan application. The loan file contained post-closing 2007 tax returns which revealed the Borrower's income, **2 years after the subject loan closing, was $5,196 per month**" (emphasis added).

[4] The value of the loan, originally, would account for the fact that borrower income was stated, not verified, and thus had some probability of being misrepresented.

Risk, to determine which alleged breaches materially affected the performance of each loan, but provides no explanation of Digital Risk's methodology.[5]   This is discussed further in ¶¶ 18–24 below.

d)   *No analysis was performed to ensure the representativeness of the chosen sample of loans:* The sample is drawn from only a subset of the "Covered Loans"[6]; specifically, it is drawn from only those Covered Loans that were delinquent, had a realized loss, or had principal forgiven as of June 2012 ("June 2012 delinquent loans"). Neither Mr. Aronoff nor Dr. Parekh performed any analysis to ensure that this sample was in fact representative (along dimensions of loan and borrower characteristics such as the loan payments being "interest-only," or the proportion of borrowers with low FICO scores) of the entire population of the "June 2012 delinquent loans." Accordingly, I conclude that it would be unreasonable to rely on the alleged 57% breach rate derived from this sample as a representative breach rate for all of the "June 2012 delinquent loans." This is discussed further in ¶ 37 below.

e)   *The breach rate derived from the biased sample is improperly applied to outstanding loans:* Mr. Aronoff applies the alleged breach rate from the sample of loans that were drawn from the "June 2012 delinquent loans" to estimate future losses from loans that had not experienced a loss or delinquency. Given the fact that these loans are still performing after the worst recession since the Great Depression, it is incorrect to assume that these loans would have the same breach rate as the loans that have already defaulted. The sampling procedure used by Dr. Parekh to estimate a breach rate was only intended to allow for inference about the "June 2012 delinquent loans." It has no validity for the population of non-defaulted Covered Loans. Since that population was not sampled and re-underwritten, there is no empirical basis for the loss calculation in the Aronoff

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[5] "Digital Risk applied a materiality threshold . . . excluding [any defect] not deemed to be material and adverse to the value of the related loan." Aronoff Declaration ¶ 24. However, the method used to determine the materiality threshold is not disclosed and Mr. Aronoff neither offers an explanation for nor tests such materiality threshold.

[6] Both the Parekh and Aronoff Declarations state that the relevant claims in this case arise from a total of 416,091 "Covered Loans" that were included in 255 "Covered Trusts." Parekh Declaration ¶¶ 2, 14; Aronoff Declaration ¶¶ 3, 25.

Declaration, which includes future losses from loans from a different population that was not sampled. This is discussed further in ¶¶ 33–36 below.

f)   *No explanation is given for missing loans from the sample, which creates potential sampling bias*: No explanation is given for why 421 loans of the originally selected sample of 5,000 loans were "unable to be delivered," and thus never examined. Sampling theory relies crucially on the assumption that the reason for inclusion in the sample is uncorrelated to the statistic of interest. Mr. Aronoff implicitly assumes that there is no correlation between breach rates and files that are (or are not) missing, but does not test this assumption. The 421 "unable to be delivered" loans represent 8.4% of the original sample of 5,000 loans, or 9.2% of the final sample of 4,579 loans. If these missing loans had significantly different breach rates, sampling bias would result, thereby rendering it inappropriate to apply the 57% breach rate derived from the sample to the population for purposes of estimation.[7] This is discussed further in ¶¶ 40–42 below.

g)   *Mr. Aronoff unreasonably assumes that the breach rate is the same for loans, whether or not they have suffered losses or defaults*: Contrary to the assumption of materiality, Mr. Aronoff relies on the assumption that breaches and loan losses are unrelated. By only sampling loans that have losses or have defaulted, and applying the resulting breach rates to other loans that have not defaulted (in the estimation of future losses), the Aronoff Declaration is implicitly assuming that the breach rate is identical in (i) loans that have losses and defaults, and (ii) loans that do not have losses or defaults. If this is true, then the alleged breaches are not material. This is discussed further in ¶ 33–36 below.

h)   *Dr. Parekh employs an improper and oversimplified methodology for determining projected future losses:* The methodology used to project future losses is

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[7] To illustrate this point, imagine, hypothetically, that loans originated in 2003 are more likely to be missing, and also are more likely to not have a breach. The sample chosen in this hypothetical would not be random with regard to breaches; it would be biased to have more breaches than the underlying population because it does not contain a subset of loans without breaches.

simplistic, and, in the words of Dr. Parekh himself, "mechanical."[8] It uses recent trends in the performance of loan pools to project future prepayments, defaults, and loss severities (given default). No consideration is given to other factors that would affect these metrics—in particular, future housing price trends, interest rate trends, and declining unemployment. This use of simple loss forecasts that fail to account for known and well-studied factors affecting default and loss severity is unreasonable. This is discussed further in ¶¶ 45–48 below.

IV.   No Analysis Was Done to Support an Assertion That Certain Categories of Alleged Breaches Materially and Adversely Affected the Performance of the Loans

12.   Relying upon Digital Risk's figures, Mr. Aronoff does not distinguish between alleged breaches that may be curable (e.g., a form is missing and might be found), alleged breaches that appear to be a matter of judgment (e.g., whether or not a borrower's income was, in fact, misrepresented), or more serious breaches. More generally, there is no analysis that establishes a connection between the alleged breaches and whether such breaches had a material and adverse effect on the performance of the loans.

13.   Mr. Aronoff states that Digital Risk, a third-party vendor, reviewed the 4,579 sample loans and determined that 2,612, or 57%, contained at least one breach. The breaches were divided into "four major groupings and 44 subcategories"—presumably by Digital Risk without input from Mr. Aronoff with respect to the relevance of the categorization for the purpose of the analysis.[9] Mr. Aronoff discusses types of breach findings generally, and presents specific counts of each of the 44 different types of breaches.[10] A

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[8] Parekh Declaration ¶ 42.

[9] Aronoff Declaration ¶ 9. This taxonomy of breaches and the assignment of breaches to categories and subcategories are presumably all decisions made by Digital Risk. I have not seen any materials that would rebut a presumption that Digital Risk (retained in September 2012) began its identification of alleged breaches, using its own judgment and its taxonomy of breaches, before Duff & Phelps was retained in May 2013. Declaration of Franklin H. Top III dated November 14, 2014 ("Top Declaration") ¶¶ 18, 20. Similarly, I have not seen any evidence of any disagreement over the identification of over 5,000 alleged breaches in over 2,500 loans between Mr. Aronoff and Digital Risk.

[10] Aronoff Declaration ¶¶ 30–38 and Exhibit E.

large number of the loans with alleged breaches (1,151—44% of all loans that have alleged breaches) have only one alleged breach.[11]

14.   A large number of alleged breaches relate to (i) the alleged failure to provide a final Truth-in-Lending Act disclosure (733 alleged breaches), (ii) the alleged failure to provide a final Form HUD-1 (422 alleged breaches), (iii) the alleged failure to obtain a qualified appraisal (615 alleged breaches), (iv) the alleged misrepresentation of income stated by the borrower but not verified by the lender (940 alleged breaches), and (v) alleged misrepresentation of employment (275 alleged breaches).[12]

15.   The above subcategories account for the majority of breaches—indeed, 60% or 2,985 of the total of 4,940 alleged breaches—identified in the 2,612 loans with alleged breaches. Based on my analysis, I determine that 1,166 of the alleged breaches are due solely to an alleged failure to provide either a Truth-in-Lending disclosure, or a form HUD-1, or to obtain a qualified appraisal. By including these breaches in calculating the breach rate, Digital Risk appears to assume—ultimately for purposes of estimating the claim amount—that if it was unable to find a document in a particular loan file, its absence constitutes a material breach. Therefore, 1,166 (23.6%) of the 4,940 alleged breaches are potentially not material breaches, that is, they may not have an economic impact, and discounting them would reduce the calculated breach rate significantly from 57% to 45%.

16.   Similarly, another 635 of the alleged breaches are due solely to an alleged misrepresentation of income made by the borrower, but not verified by the lender, or an alleged misrepresentation of employment. Digital Risk and Mr. Aronoff assume the existence of certain borrower income misrepresentations based upon evidence of borrower income in subsequent years. Such evidence does not necessarily mean a borrower's income was misstated at the time a loan application was filed, and by extension, that the loan contained a breach. It also does not necessarily follow that the misrepresentation had a material and adverse effect on the performance of the loan. This implies that an additional 635 (12.9%) of the 4,940 breaches are potentially not material

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[11] Aronoff Declaration Table 3.

[12] Aronoff Declaration Exhibit D.

breaches, and discounting them would further reduce the resultant breach rate significantly from 45% to 34%.

17.   The assumptions made by Digital Risk and Aronoff are problematic in that they open the door to constructing an artificially high breach rate by including breaches that may be curable or were really not breaches at all.

V.   Lack of Evidence of Materiality in Alleged Breaches

18.   Simply put, the analysis performed by Digital Risk, which is the basis of the conclusions in the Parekh and Aronoff Declarations, does not include evidence of materiality in the alleged breaches claimed by the RMBS Trustees. This failure has significant impact because it means that the breach rate applied by Dr. Parekh and Mr. Aronoff could be entirely incorrect.

19.   Mr. Aronoff opines that the alleged breaches materially and adversely affect the performance (and therefore the value) of the loans. He states that "the Breach Finding[s] . . . adversely and materially affect the value of the mortgage loans . . ."[13] and that "each type of Breach Finding, as determined by Digital Risk . . . would increase the Foreclosure Frequency, the Loss Severity or both."[14]

20.   It appears that Mr. Aronoff primarily—if not exclusively—relies on Digital Risk to determine that the alleged breaches materially and adversely affect the performance of the loans.

21.   There is no evidence, however, that Digital Risk attempted to perform any such analysis. Almost all identified alleged breaches have a "Rating," and this rating appears to almost always be "3."[15] This suggests that perhaps Digital Risk assigned some level of

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[13] Aronoff Declaration ¶ 10.

[14] Aronoff Declaration ¶ 44.

[15] As I stated above, there are seven loans (Loan Numbers 000000033345216, 00124759879, 0122282403, 123000614, 19561562, 32909897, 37450723) where no "Rating" was given, one loan (Loan Number 00121869036) with an alleged breach rated of only "1," one loan (Loan Number 0017878042) with an alleged breach rated of only "2," and one loan (Loan Number 39899653) where no breach was alleged.

importance to the breach. However, its rating system, and the rules that governed which breaches were rated more or less serious, are simply not disclosed.

22.   In some cases, Digital Risk identifies alleged breaches that are "deemed to materially and adversely affect the value of the mortgage loan."[16] These are instances where a particular breach is presumed to have a material adverse impact based on some underlying legal contractual definition.

23.   Mr. Aronoff's statement that Digital Risk applied a "materiality threshold" is contradicted by the many instances in which Digital Risk appears to have made no apparent attempt to determine whether or not an alleged breach had a material adverse impact on the performance of the loan. For example, in some instances, Digital Risk identifies an alleged breach such as a missing appraisal, and states that it was represented and warranted that the loan was accompanied by an appraisal that complied with a federal law called FIRREA.[17] This is the case, for example, with loan 000000018861807 which was identified as having an alleged breach under the implicit assumption that, since the appraisal could not be found, the loan (apparently originated nine years ago or more) must have been made without any appraisal at all. Furthermore, there is no stated conclusion by Digital Risk that this alleged breach (even if attributable to something other than the failure to fully receive or look for loan documentation) materially and adversely affected the performance of the loan.[18]

24.   Therefore, the Aronoff Declaration appears to rely on the unsubstantiated assumption that the alleged breaches must have had an adverse effect on the performance of the associated loan. This, however, is insufficient because it fails to provide the necessary connection between the breach and the adverse performance (and subsequent effect on

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[16] Parekh Declaration Attachment V Part 1, p. 3 of 250, second row.

[17] FIRREA is the Financial Institutions Reform, Recovery, and Enforcement Act of 1989. Parekh Declaration Attachment V Part 1, p. 3 of 250; *see* loan 000000018861807.

[18] As I discussed above, Digital Risk also notes several other types of missing documents for this loan, yet apparently does not simply conclude that it did not properly receive the entire loan file. Using this logic, one could conclude that any case of a missing loan file (such as the missing loan files for the 421 loans that were apparently never received) materially and adversely affects the performance of the loan. Based on my prior explanations and analysis, however, this cannot be the proper basis for determining a material and adverse effect.

the value), which is the rationale for applying the breach rate in estimating the claim amount.

VI.   The Materiality and Impact of an Alleged Breach Must Be Analyzed in Conjunction with Other Factors That Could Adversely Affect Loan Value

25.   From an economic perspective, a breach in a representation or a warranty would be material only if it affected the performance of the loan after controlling for other economic factors that could also affect the performance of the loan. To determine materiality, the rate of defaults on loans that are identified by Digital Risk as having breaches must be higher, controlling for economic conditions and loan characteristics as represented, than the defaults on loans under similar circumstances and with similar characteristics not identified by Digital Risk as having breaches. Absent this type of analysis, there is no indication that the defaults and losses of loans with alleged breaches were caused by the alleged breaches as opposed to the same fundamental conditions that caused the defaults in loans without any alleged breaches.

26.   Instead, there is overwhelming academic evidence that the primary cause of the rise in mortgage defaults and delinquencies (and therefore the losses of loan value) was the unexpected and unprecedented decline in U.S. home prices and the deterioration in macroeconomic conditions.

27.   In 2007 and 2008, after nearly a decade of strong macroeconomic growth, the U.S. economy was severely impacted by a global credit crisis and a severe recession that lasted from December 2007 to June 2009 (the "Great Recession").[19] The Great Recession, which was the most severe economic contraction in the United States since the Great Depression,[20] resulted in a significant deterioration of macroeconomic conditions. For example, during the Great Recession, real gross domestic product

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[19] "US Business Cycle Expansions and Contractions," The National Bureau of Economic Research, http://nber.org/cycles/cyclesmain.html. The recession experienced between 2007 and 2009 has been called the Great Recession by numerous observers, including former Federal Reserve Chairman Ben Bernanke. *See* Ben S. Bernanke, Chairman of the Federal Reserve, "The Effects of the Great Recession on Central Bank Doctrine and Practice," October 18, 2011, http://www.federalreserve.gov/newsevents/speech/bernanke20111018a.htm.

[20] "Gauging the Impact of the Great Recession," Federal Reserve Bank of San Francisco, http://www.frbsf.org/economic-research/publications/economic-letter/2011/july/impact-great-recession

("GDP") growth, a broad and commonly used measure of economic activity, declined by approximately 3.6%.[21] In the fourth quarter of 2008 alone, GDP growth declined 2.2%. The Great Recession also brought about significant job losses and a corresponding spike in the unemployment rate. By October 2009, the unemployment rate in the United States had risen to 10%, up from only 4.4% in May 2007.[22] This dramatic rise in the unemployment rate represented a net loss of more than seven million jobs.[23]

28.   Moreover, from 2006 to 2011, average home prices fell for six consecutive years, the longest consecutive period of year-over-year declines in home prices over at least the last 40 years.[24]   As the U.S. economy endured a significant deterioration in macroeconomic conditions, and U.S. home prices declined at an unprecedented rate, mortgage defaults and delinquencies increased significantly. From the middle of 2005 through the end of 2009, the serious delinquency rate—as measured by foreclosures and delinquencies of 90 days or more—on subprime mortgages increased from 5.7% to almost 30.6%, and the serious delinquency rate on prime mortgages increased approximately tenfold, from 0.7% to 7.0%.[25]

29.   Many academic researchers have concluded that the rise in defaults and delinquencies starting in 2006 was primarily driven by the changes in macroeconomic conditions and the unprecedented decline in housing prices. Applying this logic to the work performed by Dr. Parekh and Mr. Aronoff leads to the conclusion that, because their calculations do not take into account these key macroeconomic factors, the alleged breach rates cannot be applied to losses in order to estimate a claim amount.

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[21] "Real Gross Domestic Product (GDPC1)," Federal Reserve Bank of St. Louis, FRED® Economic Data, https://research.stlouisfed.org/fred2/series/GDPC1.

[22] " Labor Force Statistics from the Current Population Survey (LNS14000000)," Bureau of Labor Statistics, http://data.bls.gov/timeseries/LNS14000000 .

[23] " Labor Force Statistics from the Current Population Survey (LNS12000000)," Bureau of Labor Statistics, http://data.bls.gov/timeseries/LNS12000000?years_option=all_years&periods_option=all_periods

[24] Robert J. Shiller, *Irrational Exuberance,* 2nd ed. (New York: Broadway Books, 2005); Shiller, Robert J., *The Subprime Solution: How Today's Global Financial Crisis Happened, and What to Do about It* (Princeton University Press, 2008).

[25] Mortgage Bankers Association National Delinquency Survey (2013); S&P/Case-Shiller Home Price Indices.

30.   Dr. Parekh and Mr. Aronoff patently ignore the evidence that the dramatic and
unexpected decline in housing prices and the Great Recession (with its attendant impact
on unemployment rates) had a major impact on defaults and therefore loan values. They
implicitly assume that all defaults and delinquencies in the population were caused by the
alleged breaches and not by such factors as a homeowner's decision to walk away from
an underwater mortgage or an unforeseen loss in employment, both of which have been
shown to be statistical predictors of defaults during the Great Recession. They have not
presented an approach that allows them to distinguish the effects of the Great Recession
from any alleged effects on loan performance (and thus value) due to the alleged
breaches. By ignoring the causes of the mortgage defaults during the Great Recession,
they have created what amounts to an artificial vacuum that does not allow them to
establish materiality.

31.   I observe that Cowen & Company and Dr. Parekh selected the sample of loans from (i)
loans which had a realized loss, (ii) delinquent loans, or (iii) loans that were previously
modified. In this sample, Digital Risk found breaches in 57% of the loans. This implies
that 43% of the loans that had a realized loss, were delinquent, or were previously
modified did **not** have breaches. Therefore, other factors unrelated to the alleged
breaches must have caused those loans to default. Just as economic conditions and loan
characteristics unrelated to the alleged breaches could cause defaults in loans without
breaches, those same economic conditions and loan characteristics could also be the sole
cause of the performance of the loans that were identified by Digital Risk as having
breaches.

VII.   The Sample Used in the Aronoff Declaration Is Inappropriate and Unreasonable[26]

32.   Statistical sampling is designed to provide unbiased estimates of characteristics of the
population from which it is drawn. No sampling mechanism was devised by Dr. Parekh
or Mr. Aronoff to draw an inference about the population of non-delinquent loans, and

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[26] While this declaration identifies and discusses several flaws in the RMBS Trustees' sampling methodology, it is
not meant to be an exhaustive analysis.

yet the breach rate was applied to the non-delinquent loans. This makes the sample used in the Aronoff Declaration inappropriate and unreasonable.

33. The sample of 5,000 loans was drawn from the "Sampling Population" of 149,568 loans that were delinquent, had a realized loss, or had principal forgiven as of June 2012. (As I stated above, I refer to this Sampling Population as the "June 2012 delinquent" loans).[27] Other loans that were either paid off or current as of June 2012 were not included in the "June 2012 delinquent loans" and so had a 0% probability of being sampled.[28]

34. Dr. Parekh refers to the "June 2012 delinquent" loans as an **adverse sample** of the entire universe of Covered Loans, and opines that "sample results [the 57% breach rate] can only be extrapolated to the ["June 2012 delinquent" loans] . . . [i]n other words, because an adverse sample was employed, any estimates of claims resulting from the use of the adverse sample can only arise from Covered Loans that suffered a realized loss **or are projected to suffer a loss**."[29]

35. However, as described more fully below, projected future losses as estimated in the Parekh Declaration come not just from the "June 2012 delinquent" loans but also, necessarily, from other loans that were not delinquent or impaired at that time, and thus had no chance of being sampled. Therefore, loans that are "projected to suffer a loss" in the Parekh Declaration are partly those that were excluded from the sample. Notwithstanding, Mr. Aronoff draws a conclusion (partly supported by the Parekh Declaration) about these loans, even though they were not sampled.[30]

36. In short, statistical sampling is designed to provide unbiased estimates of characteristics of the population from which it is drawn. However, no sampling mechanism was devised

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[27] Parekh Declaration ¶ 14.

[28] "Delinquent loans" as of June 2012 is not defined; that is, it is not clear if this is a measure of whether or not the loan had ever been delinquent, or was 30, 60, 90, or more days delinquent at that point in time.

[29] Parekh Declaration ¶ 25 (emphasis added).

[30] The Parekh Declaration goes on at some length regarding the use of a Monte Carlo simulation to confirm that the sample size chosen by Cowen & Company was of sufficient size to justify the confidence intervals reported in the Declaration. I do not discuss that section further in this declaration as neither the Parekh Declaration nor the Aronoff Declaration makes use of the actual confidence intervals calculated by, for example, applying the 5th or 95th percentile of the claim amount. Failure to use these actual confidence intervals in calculating the claim amount leaves the analysis incomplete, as the range and variance, rather than just the mean, are necessary pieces of information in order to fully understand the accuracy of the claim amount.

in the Parekh or Aronoff Declarations to draw an inference about the population of non-delinquent loans.[31] The Parekh Declaration does not use a sampling procedure to estimate future loan losses. Rather, it uses a mechanical, deal-level model that does not utilize sampling. Consequently, estimates of future losses come both from loans that have been modified or suffered losses, as well as from loans that have not been modified or suffered losses and that were never sampled. Nevertheless, the Aronoff Declaration draws conclusions about the breach rate in these loans, even though none were sampled.

37.   Even with respect to the delinquent loans, no analysis is presented in either the Aronoff or Parekh Declarations examining whether or not the sample was representative of the population with respect to characteristics that are relevant to damages due to defaults and severity of loss. Academic research, for example, has shown that severity of house price declines is a significant determinant of default probability and loss severity.[32] From December 2007 to June 2009, house prices declined dramatically in some cities and less so in others. The sample drawn by Cowen & Company fails to ensure that one city or region is not over- or under-represented. A representativeness test would identify situations where, for example and hypothetically, 35% of the Covered Loans were collateralized by properties in the state of California, but 50% of the loans in the sample were collateralized by properties not in the state of California.

38.   Even samples that are randomly selected should be examined to ensure their representativeness along certain characteristics.[33] Tests of representativeness should be performed with regard to all variables that might be associated with breaches. For example, if breaches are likely to be highly correlated with loans for which borrower income was stated (rather than verified), the representativeness of the sample (with regard to the proportion of stated income loans) as compared to the population of loans is an important measure of the reliability of the sample.

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[31] Specifically, loans not delinquent, modified, or having suffered a realized loss as of June 2012.

[32] *See* Kristopher Gerardi et al., "Making Sense of the Subprime Crisis," Brookings Papers on Economic Activity (Fall 2008), pp. 69–159; Ronel Elul, "Residential Mortgage Default," Federal Reserve Bank of Philadelphia *Business Review* (Third Quarter 2006).

[33] *See* James P. Shaver, "What Statistical Significance Testing Is, and What It Is Not," *Journal of Experimental Education* 61, no. 4 (1993), pp. 293–316.

39.   In this case, there is no analysis in either the Parekh or Aronoff Declarations of the representativeness of the sample as compared to the "June 2012 delinquent" loans, meaning that there is uncertainty as to how representative the sample is of the "June 2012 delinquent" loans. Additionally, there is no analysis of the representativeness of the sample with regard to all Covered Loans, as well as reasons to think that the sample loans are not representative because, as described above, most Covered Loans were not "June 2012 delinquent" loans and so had 0% probability of being included in the sample.

40.   Of the 5,000 loans in the sample chosen by Cowen & Company, only 4,579 were actually analyzed.[34] The remaining 421 loans are described as having been "never delivered," but the characteristics of these 421 loans, and specific reasons why they were not delivered, are not given. If they are missing for some reason negatively related to the number of breaches, this would bias the estimate of defect frequency in the remaining adverse sample upward, and this upward-biased estimate would then be applied to the entire population, resulting in an overestimate of claim amount. For example, if the loans were missing because they were underwritten by originators with different practices that resulted in fewer alleged defects, this would result in a biased breach rate. If they were older or newer, and hence underwritten under different conditions than the remaining sample, this might result in a different type and frequency of alleged defect. Without considering these factors, Mr. Aronoff and Dr. Parekh are unable to reject the hypothesis that the remaining portion of the sample is unbiased.

41.   Mr. Aronoff simply states that some loan files were unavailable, and relies on the Parekh Declaration in stating that "the fact that they were never delivered to [Digital Risk] does not affect the determination of the Breach Rate or the effectiveness of extrapolating the Breach Rate to the Sample Population."[35] Assuming that missing data will not bias results is insufficient. No attempt was made to test theories about the reason for the

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[34] Aronoff Declaration ¶ 25.

[35] Aronoff Declaration footnote 11, citing Parekh Declaration ¶¶ 30, 36 for support.

missing data that might create a biased inference about the population.[36] This is a necessary condition for relying on the randomness of the sample.

42.   A non-random exclusion from a sample can bias the sample results, and there is a well-developed literature on biases that can be introduced when certain members of a population are excluded from a sample.[37] The ratio of missing to analyzed loans is about 1:11. This is a non-trivial proportion that renders their conclusions unreliable.[38]

VIII.   Improper Modeling of Projected Future Losses

43.   For the reasons described in detail below, I find that the Parekh Declaration uses an overly simplistic methodology to predict future losses and does not take into account various complexities in modeling expected losses. Additionally, in projecting future losses, Mr. Aronoff incorrectly applies breach rates to loans that had not defaulted as of June 2012.

44.   Dr. Parekh relies on a deal-level model to forecast future defaults and severity as of April 2014. The sole inputs to this forecast are the deal-level default rate, loss severity, and the prepayment rate over the prior six months. While represented as a standard approach in the industry, no evidence is presented to support this assertion.

A.   An Overly Simplistic Methodology to Predict Future Losses

45.   The default rates forecast by the simple model are applied indiscriminately to all the loans in the Covered Trusts, regardless of whether the characteristics of the Covered

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[36] Additionally, as I describe below, Digital Risk makes an apparent distinction between loans where the loan files are completely missing (these are excluded), and those missing significant portions of the file—these are labeled "Breaches." *See* Aronoff Declaration ¶ 25, footnote 11.

[37] A famous example of a similar sampling error occurred in the 1936 U.S. presidential election, in which a prominent magazine, sampling millions of people, predicted that Alfred Landon would handily win the election over Franklin Roosevelt. One of the main errors had been to rely on telephone directories for creating the sample list. Voters who did not own telephones, and were therefore not in telephone directories, were largely inadvertently excluded from the sample, and a majority of those excluded favored Roosevelt. *See* Peverill Squire, "Why the 1936 Literary Digest Poll Failed," *Public Opinion Quarterly* 52, no. 1 (Spring 1988), pp. 125–133.

[38] For example, if they had analyzed the missing 421 loans and found none of them to have breaches, that would reduce the breach rate to 52% and could reduce the claim amount by over $1 billion (52% of 21,228.4 billion is 11,038.7 billion).

Loans in the trusts differed from those of the loans in the trusts that were not originated by Lehman or Lehman affiliates.[39]   For example, if a trust comprised a group of Alt-A mortgages from Lehman and a group of subprime mortgages from another entity, the forecasted average default rate of the loans in this trust would likely misrepresent the future default rate of the Lehman or Lehman affiliate originated loans. There is no evidence that this issue was addressed in the forecasting methodology.

B.   Failure to Account for Complexities in Modeling Expected Losses

46.   The modeling of the future performance of mortgage-backed assets is the subject of high-level quantitative research conducted by institutional market participants engaged in the development and the ongoing maintenance of "asset-specific predictive loss models, cash flow models, and pricing models."[40]   These models take into account a number of factors not examined in the Parekh Declaration, including basic variables such as trends in housing prices, seasoning, the structure of the loan payments, interest rates at which the underlying loans were written, the proportion of interest-only mortgages, and more complex factors such as the optionality value of walking away from an underwater mortgage.[41]

47.   Dr. Parekh estimates that the future prepayment rate will simply be the same as the average of the actual prepayment rate over the previous six months. Thus, his Declaration does not account for many factors known to contribute to variation in the prepayment rate, including the proportion of fixed and floating rate loans, interest-only loans, and balloon payment loans, as well as regional differences in behavior. He has also not considered whether the forecasted default rates are even applicable to the set of Covered Loans within the Covered Trusts, as discussed above.

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[39] I understand that some of the loans in the 255 Covered Trusts at issue were originated by third parties, and are not Covered Loans.

[40] *See, e.g.*, "Credit Suisse Non-Agency RMBS Models," by Credit Suisse Fixed Income Research, August 1, 2011; "PIMCO Advisory's Approach to RMBS Valuation," PIMCO Advisory, December 8, 2010.
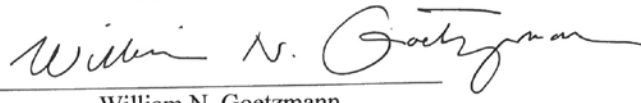
[41] Lakhbir S. Hayre et al., "Modeling of Mortgage Defaults," *Journal of Fixed Income* (Spring 2008); C.H. Ted Hong, "Dynamic Econometric Loss Model: A Default Study of US Subprime Markets," in *Handbook of Quantitative Finance and Risk Management*, edited by C.F. Lee et al. (Springer Science+Business Media, LLC, 2010).

48.   The only validation presented for the model used to forecast billions of dollars in future losses is a single, non-randomly selected securitization offered for illustrative purposes. No attempt was made to validate the loss forecasting model; either by a back-test on a sample of securitizations, or by comparison to more sophisticated models that use a broader range of variables known to be correlated to loan default and severity of loss.

IX.   Conclusion

49.   The loss calculations by Dr. Parekh and Mr. Aronoff rely on a flawed sampling procedure that is inappropriately applied and extrapolated. They rely on third-party providers to sample the data, to determine materiality, and to model expected future loan losses without making an effort to empirically validate many of the key assertions on which their conclusions are based. Specifically, Dr. Parekh and Mr. Aronoff fail to apply or provide any empirical evidence that the alleged breaches had a material adverse effect on the performance of the loans, a critical omission given that I understand this is one of the core elements the RMBS Trustees must prove for LBHI to bear any repurchase liability under the applicable loan agreements. Further, Dr. Parekh and Mr. Aronoff fail to validate the representativeness of their sample to the population of failed loans, for example, by failing to verify that the proportion of important loan characteristics in their sample reflects the broader loan population. Relatedly, Mr. Aronoff inappropriately applies the breach rate derived from a sample of defaulted loans to a population of non-defaulted loans. The only assumption that supports this approach is that defaulted and non-defaulted loans have the same proportion of breach—an assumption that is contrary to the materiality of a breach. Finally, Dr. Parekh and Mr. Aronoff use a remarkably simplistic model with three variables to estimate billions of dollars in future losses. The model is "tested" on just a single securitization. Based on the foregoing, I conclude that the analyses set forth in the Aronoff and Parekh Declarations are not a sound and reliable methodology for valuing the RMBS Trustees' claims.

Executed this ___ day of December, 2014.

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William N. Goetzmann

Appendix A

William N. Goetzmann

Office Information

Yale School of Management
Box 208200 New Haven,
Connecticut 06520-8200
E-mail: william.goetzmann@yale.edu
Internet site: http://viking.som.yale.edu

Current Position

Edwin J. Beinecke Professor of Finance and Management Studies, Yale School of Management
Director, International Center for Finance at the Yale School of Management
Research Associate*, National Bureau of Economic Research*

Education

B.A. Yale College, 1978
MBA Yale School of Management, 1986
Ph.D. Operations Research (Finance) Yale University 1990

Teaching

Integrated Leadership Program, Investment Management, Financial Management, Real Estate, Mutual Funds, Endowment Management, Hedge Funds, Empirical Methods in Finance, Financial History.

Academic Honors & Awards

- Winner of the Graham and Dodd Award for best paper in the *Financial Analysts Journal* in 2009.
- Society for Financial Studies Award for best paper in the *Review of Financial Studies*, 2007
- Real Estate Academic Initiative Harvard 2005
- INQUIRE grant for research in hedge funds 2005
- Chancellor's Distinguished Lectureship Series by the Department of Finance in LSU's E. J. Ourso College of Business Administration, Louisiana State University, 2004
- Real Estate Research Institute Grant, 2004
- Pension Real Estate Association (PREA) Grant, 2004
- INQUIRE grant for research in behavioral finance,   2003, with Massimo Massa.
- BSI/Gamma Foundation Research Grant, 2002, with Massimo Massa, for research in mutual funds.
- Honorable Mention, The William Sharpe Award for Best Paper (2000). Awarded for the best paper in 1999 by a vote of the readership of the *Journal of Financial and Quantitative Analysis*.
- The Smith Breeden Distinguished Paper Award (2000), co-winner. Given to outstanding papers published in *The Journal of Finance*.
- Alumni Teaching Award, Yale School of Management (1998)
- Roger F. Murray Prize, Institute for Quantitative Analysis, (1998)
- Real Estate Research Institute Grant [RERI] (1997)
- AREUEA Best Paper of the Year Award, *Real Estate Economics* (1997)
- Institute for Quantitative Analysis research grant with Philippe Jorion (1996)
- National Association of Realtors / Leonard Reaume Best International Real Estate Paper Award (1995)
- Homer Hoyt Advanced Studies Institute & Weimar School of Advanced Studies in Real Estate Award to Young Scholars in Real Estate (1994)
- Co-winner, *Review of Financial Studies Award* for best finance article of the year (1992)
- Research grant from The Futures Center, Columbia Business School (1992)
- Richard and Hinda Rosenthal Prize for Innovation in Investment Management (1992)

- Carr P. Collins Award for the best non-fiction book of the year (1987)
- Conger Goodyear Award (1978)
- Bates Traveling Fellowship (1977)

Past Positions

2005-2006	Visiting Professor of Finance, Harvard Business School
1994-1997	*Associate Professor of Finance*, Yale School of Management
1990-1994	*Assistant Professor of Finance*, Columbia Business School
1984-1985	*Director* of the Museum of Western Art, Denver, Colorado
1979-1990	*Writer and producer* of PBS documentaries with T.W. Timreck , New York

Finance Publications

1. Goetzmann, William N., S. Abraham Ravid, and Ronald Sverdlove. "The pricing of soft and hard information: economic lessons from screenplay sales." *Journal of Cultural Economics* 37.2 (2013), 1-37.

2. Frehen, Rik GP, William N. Goetzmann, and K. Geert Rouwenhorst. "New evidence on the first financial bubble." *Journal of Financial Economics* Volume 108:3, pp. 585–607, (2013).

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8. A Shareholder Lawsuit in 14th Century Toulouse, with Sebastien Pouget in J. Koppell, *Origins of Shareholder Advocacy*, 2010, Cambridge Press.

9. "Review of the Efficient Market Theory and Evidence: Implications for Active Investment Management" with Andrew Ang and Stephen Schaefer, in *Foundations and Trends in Finance*.

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16. "Portfolio Performance Manipulation and Manipulation-Proof Performance Measures," with Jonathan Ingersoll, Matthew Spiegel and Welch, Ivo, *Review of Financial Studies,* vol. 20, no. 5, September 2007, pp. 1503-46.

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18. "China and the World Financial Markets 1870-1930: Modern Lessons From Historical Globalization," with Andrey Ukhov and Ning Zhu, *Economic History Review,* vol. 60, no. 2, May 2007, pp. 267-312.

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23. "Fees on Fees in Funds of Funds," with Stephen J. Brown and Bing Liang, *The Journal of Investment Management,* 2004, 2(4).

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2. "Does Governance Matter: The Case of Art Museums," with Sharon Oster, in Edward L. Glaeser ed., *The Governance of Not for Profit Firms*, The University of Chicago Press, 2003.

3. "Private Value Components and the Winner's Curse in the Art Market," with Matthew Spiegel, *European Economic Review*; 39(3-4), April 1995, pages 549-55 May, 1995.

4. "How Costly is the Fall From Fashion?" in Victor A Ginsburgh, and Pierre-Michel Menger, eds. *Economics of the arts: Selected essays. Contributions to Economic Analysis,* vol. 237. Amsterdam; New York and Oxford: Elsevier, North-Holland, 1996, pages 71-84.

5. "The Informational Efficiency of the Art Market," *Managerial Finance*, 21(6) pp.25- 24, 1995.

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Other Publications

"The Arcadian Landscapes of Edward Curtis," Curatorial Essay for Whitney Museum Exhibition Catalogue The Perpetual Mirage, 1996.

"The Case of the Missing Phylactery" Proceedings of the American Antiquarian Society, 95 1985.

"The Art of the Wild West" Exhibition Catalogue, Museum of Western Art, 1984.

Toys, Tools and Carvings, Artifacts of the Eskimo, Exhibition Catalogue (Yale University Art Gallery, 1978).

About Town: A New Look at Yale and New Haven (Overland Press, 1977) with Tom Hendricks.

Book review of When the Machine Stopped for the Los Angeles Times 1987.

Book review of Collecting the West, for the Western Historical Quarterly, 1990.

Book review of Prehistoric Architecture of North America for Parabola, 1981.

Book Review of Active Portfolio Management, by Richard Grinold and Ronald Kahn, 1996 (Journal of Finance)

Books

The Great Mirror of Folly: Finance, Culture, and the Great Crash of 1720 eds. William Goetzmann, Catherine Labio, K.Geert Rouwenhorst and Timothy Young. Forthcoming Yale Press, 2013.

Editor, Translation of Germain Sicard's *The Mills of Toulouse* forthcoming, Yale Press publication date expected 2014.

The Origins of Value: The Financial Innovations That Created Modern Capital Markets
Goetzmann, William N; Rouwenhorst, K Geert, eds Oxford and New York: Oxford University Press, 2005, pp. xii, 404.

The Equity Risk Premium: Essays and Explorations with Roger Ibbotson. 2006, Oxford and New York: Oxford University Press.

Modern Portfolio Theory and Investment Analysis, Sixth Edition, with Elton, Gruber, Brown, Goetzmann. John Wiley and Sons, 2006.

The West of the Imagination, 1986, significantly changed second edition 2009, with W.H. Goetzmann, University of Oklahoma Press.

Institutional Affiliations

Research Associate, National Bureau of Economic Research, Inc.
Member of the American Finance Association, European Finance Association, Western Finance Association, American Economic Association, American Real Estate and Urban Economics Association, American Real Estate Society, American Antiquarian Society, Connecticut Academy of Arts and Sciences. Fellow of Jonathan Edwards College.
Board Member, The Jeffrey Company, since 2006.
Trustee, Sarah Lawrence College. 2012-present.
Trustee, Hamden Hall Country Day School, 2011-present.
Member, Scientific Advisory Board, GM-VEBA fund, 2013 to present.
Member, Scientific Advisory Board, Zebra Capital.
Chair, Investment Committee the Nathan Cummings Foundation, 2012-present.
Past board member, The American Finance Association 1999-2001, 2009-2011.
Past President Western Finance Association, 2010.
Past President, European Finance Association, 2006.
Past Board Member, The Commonfund. *Chair of the Audit and Risk Committee*, 2005-2006.

Past Independent Director, The Guardian Group of Mutual Funds, 2005-2006.
Program Chair, European Finance Association Meetings, 2005.
Past member of the Executive Committee, European Finance Association.

Editorial & Referee Duties For Professional Journals

Associate Editor, *Review of Finance* 2003-2008
Former Co-Editor, 1997 - 2000, with Susan Wachter and Joseph Gyourko, *Real Estate Economics*.
Co-Editor, with Dennis Capozza, University of Michigan: Financial Economics Network, Series E: Journal of Real Estate Abstracts
Associate Editor, 1997 -2000, *Journal of Finance.*
Associate Editor , 1997- 2003 *Journal of Financial and Quantitative Analysis*.
Editorial Board Member, *Journal of Portfolio Management, Journal of Real Estate Finance and Economics, Emerging Markets Review* (associate editorial advisory board member).
Referee for: *Journal of Finance, American Economic Review, Real Estate Economics, Journal of Real Estate Finance and Economics, Review of Financial Studies, Journal of Housing Economics, Journal of Political Economy, Journal of Business, Journal of Financial Research.*

Trial and Deposition Testimony as an Expert Witness in the Preceding Four Years

American Century Investment Mgmt., Inc. v. J.P. Morgan Invest Holdings LLC, AAA Arbitration No. 58148Y022009, *award confirmed*, Case No. 116-CV21103, 2011 WL 7628732 (Cit. Ct. Jackson Cnty., Mo., Dec. 6, 2011). Testified at arbitration on behalf of Plaintiffs regarding stable value fund products.

The Western & Southern Life Ins. Co., et al. v. DLJ Mortgage Capital, Inc., et al., Case No. A01105352 (Ohio Ct. Comm. Pleas, filed Oct. 17, 2011). Deposition testimony on behalf of Plaintiffs regarding residential mortgage-backed securities.

Government Service

Financial and Valuation Advisory Committee to the Congressional Oversight Panel to Review the Current State of Financial Markets and the Regulatory System. 2008-2009.
http://cop.senate.gov/documents/cop-020609-report.pdf
http://cop.senate.gov/blog/entries/blog-020609-valuationreport.cfm
Co-author , *Evaluation of Active Management of the Norwegian Government Pension Fund – Global*, for the Norwegian Ministry of Finance, 2009.

Film, Television and Internet Credits

- Creator, co-executive producer, co-writer Thomas Eakins, A Motion Portrait, an American Masters program, broadcast nationally on PBS, 1986, winner of the Cine Golden Eagle Award.
- Co-producer, writer The Mystery of the Red Paint People, a NOVA program, broadcast nationally on PBS, 1987, Red Ribbon Winner, American Film Festival, Cine Golden Eagle Award.
- Writer, Augustus Saint-Gaudens' Masque of the Golden Bowl, an American Masters program, broadcast nationally on PBS, 1987.
- Writer, The Olde New England Concert, PBS Christmas Special, 1985.
- Co-producer and Writer, The Quest For Norse America, Broadcast on European and Scandinavian television 1993, honorable mention in Cinarchaea Film Festival, Kiel, Germany 1996. Cinematography Viking America, a NOVA program, broadcast January, 1995.

Appendix B

Documents Relied Upon by Professor William N. Goetzmann

Document Title, Bates Numbers	Document Date
Pleadings	
Declaration of James H. Aronoff, with Exhibits A–E (filed August 22, 2014)	August 21, 2014
Declaration of Charles A. Parekh, Ph.D., with Attachments I–VI (filed August 22, 2014)	August 21, 2014
Notice of the RMBS Trustees' Motion to (I) Increase the Reserve to $12.143 Billion and (II) Estimate and Allow Their Claims for Covered Loans at $12.143 Billion Pursuant to Section 502(c) of the Bankruptcy Code, with Attached Motion and Exhibits 1 and 2	August 22, 2014
Notice of Lehman Brothers Holdings Inc.'s Cross-Motion to Establish a Protocol to Resolve Claims Filed by RMBS Trustees	October 15, 2014
The RMBS Trustees' (1) Reply in Support of Their Motion to Estimate the RMBS Claims Using Statistical Sampling, and (2) Opposition to Lehman's Cross-Motion for a Full Loan-by-Loan Review	November 14, 2014
Declaration of Charles A. Parekh, Ph.D., with Attachments I–III	November 14, 2014
Declaration of Franklin H. Top III Regarding the RMBS Trustees' (1) Reply in Support of Their Motion to Estimate the RMBS Claims Using Statistical Sampling, and (2) Opposition to Lehman's Cross-Motion for a Full Loan-by-Loan Review, with Exhibits A and B	November 14, 2014
Books / Academic Literature / Public Press	
Bernanke, Ben S., "The Effects of the Great Recession on Central Bank Doctrine and Practice" (Federal Reserve Bank of Boston, 56th Economic Conference, October 18, 2011), available at http://www.federalreserve.gov/newsevents/speech/bernanke20111018a.htm	
"Credit Suisse Non-Agency RMBS Models," by Credit Suisse Fixed Income Research	August 1, 2011
Elul, Ronel, "Residential Mortgage Default," Federal Reserve Bank of Philadelphia *Business Review* (Third Quarter 2006)	
"Gauging the Impact of the Great Recession," Federal Reserve Bank of San Francisco, http://www.frbsf.org/economic-research/publications/economic-letter/2011/july/impact-great-recession	
Gerardi, Kristopher, et al., "Making Sense of the Subprime Crisis," Brookings Papers on Economic Activity (Fall 2008)	
Hayre, Lakhbir S., et al., "Modeling of Mortgage Defaults," *Journal of Fixed Income* 17, no. 4 (Spring 2008)	
Hong, C.H. Ted, "Dynamic Econometric Loss Model: A Default Study of US Subprime Markets," in *Handbook of Quantitative Finance and Risk Management*, C.F. Lee et al. (eds.) (Springer Science+Business Media, LLC, 2010)	
"PIMCO Advisory's Approach to RMBS Valuation," PIMCO Advisory	December 8, 2010
Shaver, James P., "What Statistical Significance Testing Is, and What It Is Not," *Journal of Experimental Education* 61, no. 4 (1993)	
Squire, Peverill, "Why the 1936 *Literary Digest* Poll Failed," *Public Opinion Quarterly* 52 (1988)	

Document Title, Bates Numbers   **Document Date**

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"Labor Force Statistics from the Current Population Survey (LNS12000000)," Bureau of Labor Statistics,
http://data.bls.gov/timeseries/LNS12000000?years_option=all_years&periods_option=all_periods

"Labor Force Statistics from the Current Population Survey (LNS14000000)," Bureau of Labor Statistics, http://data.bls.gov/timeseries/LNS14000000

Mortgage Bankers Association National Delinquency Survey (2013)

"Real Gross Domestic Product (GDPC1)," Federal Reserve Bank of St. Louis, FRED® Economic Data, https://research.stlouisfed.org/fred2/series/GDPC1

Shiller, Robert J., *Irrational Exuberance*, 2nd ed. (New York: Broadway Books, 2005)

Shiller, Robert J., *The Subprime Solution: How Today's Global Financial Crisis Happened, and What to Do about It* (Princeton University Press, 2008)

S&P/Case-Shiller Home Price Indices

"US Business Cycle Expansions and Contractions," National Bureau of Economic Research, http://nber.org/cycles/cyclesmain.html

All other materials cited in this report and in the exhibits to this report.